I. AMENDMENTS

Amendments to the Specification:

Please amend the following paragraph appearing under the title on page 1 of the specification:

Cross-Reference to Related Applications

This application is filed in accordance with 35 U.S.C. § 120, and as such is a continuation of U.S. Serial No.: 08/933,855, filed September 17, 1997, now U.S. Patent No. 6,632,232, issued October 14, 2003, which in turn is a continuation of U.S. Serial No.: 08/401,465, filed March 9, 1995, now abandoned, which is a divisional of U.S. Serial No.: 08/214,654, filed March 15, 1994, now U.S. Patent No.: 5,403,335, which is a continuation-in-part of U.S. Serial No. 07/867,745, filed April 10, 1992, now abandoned, the contents of these applications are hereby incorporated by reference into the present disclosure.

Please amend the paragraphs appearing on page 5, line 30 through page 6, line 22, as follows:

~~FIG. 14 is a bottom view of a variation of the invention also utilizing multiple vacuum chambers.~~

~~FIG. 15 is a partial side cross-sectional view of the variation shown in FIG. 14.~~

~~FIG. 16 shows a soft insert suitable for producing a vacuum on the front of the eye.~~

~~FIGS. 17, 18 and 19 are enlarged side cross-sectional views of peripheral or outer edge of the vacuum base where they would meet the surface of the eye during use.~~

~~FIG. 20 shows a bottom view of a variation of the device which incorporates radial walls within the vacuum chamber to help prevent rotation of the vacuum base during ophthalmic operations.~~

~~FIGS. 21, 22 and 23 show partial cross-sectional views of three variations of the radial wall devices placed in the vacuum chamber shown in FIG. 19.~~

~~FIG. 24 is a bottom view of a vacuum device showing, in particular, an insert utilizing a number of pins for engaging the anterior surface of the eye during the eye surgery.~~

~~FIG. 25 is a side view cross section of the device of FIG. 24.~~

~~FIGS. 26, 27, 28, 29 and 30 depict the steps of using the inventive device to prepare the eye and install the ICR in the corneal stroma.~~

~~FIG. 31 shows the positioning of the ICR in the stroma.~~

Please amend the specification beginning on page 14, line 33 through page 16, line 10, as follows:

FIGS. ~~Figures~~ 12 and 13 show, respectively, a bottom view and a side partial cross-sectional view of another variation of the support base (98) in which the circumcorneal vacuum ring does not completely encircle the cornea. This configuration allows the viewing port (as shown in FIG. ~~Figure~~ 3 as (55)) to be quite large and allows the surgeon views of the cornea both from above through the inner bore of the dissector barrel or through the side viewing port during the production of the inner stromal channel. Specifically, the open part of the channel meets the eye at surface (100) and the vacuum source line opening provides a vacuum source to the opening which fits against the eye. ~~Support base (102), as is shown in FIGS. 14 and 15~~ In another embodiment, the support base is a multi-chamber device analogous to that found in FIGS. ~~Figures~~ 12 and 13. The device and added upper chamber ~~(104)~~ allow the vacuum to more easily circumnavigate the cornea.

~~Figure 16~~ Another embodiment contains ~~shows a side perspective cross section of~~ an insert (101) which is suitable for inclusion in the lower end of the support base. This insert has a support ring ~~(105)~~ which may be metal, stiff plastic or other suitable material. A rubber seal ~~(103)~~ which fits against the edge is bonded to the support ring ~~(105)~~. The support ring may have holes ~~(107)~~ inserted therein so to allow vacuum access when the insert is placed into a support ~~such as that shown in FIGS. 20-23~~.

~~FIGS. 17, 18 and 19 show three~~ Additional variations of the surfaces ~~which~~ are desirably used as the surfaces which meet the cornea in the circumcorneal vacuum ring. Specifically, the variations contain ~~FIGS. 17-19 are partial cross-sections of the~~ vacuum chambers ~~showing~~ having various edges of the circumcorneal vacuum chamber where the edges meet the surface of the eye. ~~Specifically, FIG. 17 shows a~~ One variation ~~in which the~~ contains a circumcorneal chamber ~~(104)~~ which has an outer surface ~~(106)~~ which is disposed at an angle J such that J which is the angle which a tangent to a patient's cornea would make at that point. Similarly, an inner chamber edge ~~(108)~~ is cut at an angle K such that the inner chamber edge ~~(108)~~ would lie substantially flat against the patient's cornea. In ~~FIG. 18~~ a further aspect, the vacuum chamber ~~(104)~~ has an outer rounded chamber edge ~~(110)~~ and an inner chamber edge ~~(108)~~ which is similar in design to the previous described variations ~~variation shown in FIG. 17. The FIG. 19~~ One additional variation uses an outer chamber edge ~~(112)~~ which is somewhat sharper but is not so sharp as to cause substantial trauma or cutting of the corneal surface. The inner chamber edge ~~(114)~~ is of a similar shape.

Please amend the specification appearing on page 16, line 15 through page 18, line 17, as follows:

The preferred variant of the circumcorneal vacuum ring contains a number of ridges or vanes which serve to help prevent rotation of the support base during the ophthalmic operation. There are a number of suitable ways of introducing such anti-rotating features. For instance, in ~~Figure~~ FIG. 3, short ridges ~~(116)~~ are included both in the inner and outer walls of the circumcorneal vacuum ring (52). The lower terminus of these short vanes ~~(116)~~ rest against the cornea and after vacuum is applied to the vacuum ring (52), the cornea is drawn up into the space surrounding the vanes ~~(116)~~ and the vanes prevent the support base from rotating. ~~FIGS. 20-23 show other~~ Other versions of vanes are suitable for preventing rotation of the support base (50). ~~FIG. 20 shows a bottom view of~~ For example, the support base (50) ~~in which~~ can contain eleven vanes ~~(116) are~~ interposed within the circumcorneal vacuum ring (52). ~~As is shown in partial cross-section of the rendition shown in FIG. 20, the~~ The vanes may have several identifying features. For example, the ~~The~~ surface ~~(118)~~ must meet the surface of the cornea after the suction is applied to the ring. ~~There are pathways variously~~ Pathways through the opening ~~(120)~~ and the stub wall ~~(122)~~ ~~which~~ can allow the vacuum to be distributed from the vacuum line opening ~~(124)~~ to be distributed evenly about the full circumference of the circumcorneal vacuum chamber. The pathways for the distribution of the vacuum around the chamber is not critical. Multiple vacuum inlets are suitable and other channel shapes are appropriate. ~~FIG. 22 shows still~~ In yet another variation of the vacuum chamber vane ~~(126) also utilizing~~ a stub wall ~~(122)~~ is used to allow vacuum distribution. The vacuum chamber vane ~~(126)~~ uses an additional slot ~~(128)~~ to distribute the vacuum. Once again, however, the lower surface of the vane meets flush with the eye and forms small indentations within the cornea once vacuum is applied.

~~FIG. 23 shows~~ This invention also provides a variation in concept for vane shape. The variation, instead of providing for flat surface against the cornea instead is stepped in such a way that small points ~~(130)~~ which are cut into the vane ~~(126)~~ engage the cornea when vacuum is applied to the device. Vacuum is distributed through hole ~~(120)~~ and in the spaces formed between outer wall ~~(132)~~ and the lower vane point, the space between the two vane points ~~(130)~~ and the space between the upper vane point ~~(130)~~ and the inner wall ~~(134)~~.

~~FIGS. 24 and 25 show~~ This invention further provides another variation in which an insert ~~(136)~~ containing a number of pins ~~(138)~~ that may be included as an integral portion of the support base (50). ~~FIG. 24 shows a bottom view of the ring as it is placed within the bottom portion of the support base (50).~~ The insert ring ~~(136)~~ contains a surface ~~(140)~~ which serves as the inner wall of the circumcorneal vacuum chamber ~~(142)~~. In this variation of the invention, pins ~~(138)~~ extend for a short distance through that sloping wall ~~(140)~~ so that as vacuum is introduced into chamber ~~(142)~~, the pins engage the eye and penetrate a short distance into the cornea. The insert ring may also include slots ~~(142)~~ to allow the vacuum to be distributed geometrically about the pins with a bit more regularity. The insert ring ~~(136)~~ may be placed in a chamfer within the interior surface of support base (50)~~ as is shown in a cross section in FIG. 25. As is shown in FIG. 25, the~~ The surface of the insert ring which meets the anterior cornea ~~(140)~~ is, or may be, sloped in the same fashion as is the anterior wall (108)~~ found in FIGS. 17 and 18~~. Incidentally, the outer vacuum chamber wall ~~(144) is shown in cross section in FIG. 25 to have~~ can also contain a square shoulder. It has been observed that this configuration causes only minimal trauma when used in this inventive device with an appropriate amount of vacuum. The trauma is seen to be even less than that observed with vacuum chamber outer walls ~~(106) such as is shown in FIG. 17~~.

Please amend the paragraphs appearing on page 18, line 28 to page 20, line 8, as follows:

~~FIGS. 26-29 show the process for using the combination device.~~

~~FIG. 26 shows~~ In one aspect, a combination of support base (50) and corneal centering and fixation guide (62) placed on the front of a patient's eye ~~(146)~~. The surgeon centers the device on the eye using reticle (82). At this point, vacuum has not been applied to the circumcorneal vacuum ring (52). However, as soon as the device is considered to be centered, vacuum is applied ~~as is shown in Figure 27~~ through vacuum source line (58). The amount of vacuum applied is known. The corneal centering and fixation guide (62) is then removed from support base (50). It may be observed that within circumcorneal vacuum ring (52) is a slight bulging of the eye. This bulging of the eye contacts the vanes within the vacuum chamber~~; such vanes are discussed with relation to FIGS. 3, 4, 20, 21, 22 and 23~~, and the insert ring as discussed supra ~~shown in FIGS. 24 and 25~~. This contact with the vanes helps prevent rotation or other movement of the support base (50). Once the support base is firmly affixed to the eye, the lance (68) is brought through the window in the support base to produce a small incision ~~(148)~~ in the cornea. The incision extends through epithelium and Bowman's membrane and is approximately 1-2 mm long and about 0.2 mm deep. The incision is on a radius of the cornea. A small spatula which fits into incision ~~(148)~~ may be used to make an initial separation in the inner lamellar layers at the bottom of incision ~~(148)~~ within the stroma. This "teasing" of the lamella will facilitate the insertion of the dissector blade (66). It should be noted at this point that the large viewing port (54) promotes ease of viewing for the surgeon onto the cornea particularly when used in conjunction with the large ID bore of the support base (50).

Finally, dissector barrel (64) is introduced into the support base (50). The dissector blade (66) is introduced into the cornea through incision ~~(148)~~ and turned until dissector blade support arm (84) nears the incision ~~(148)~~. When the support arm reaches the incision, the rotation of dissector barrel (64) and attached dissector blade (66), it is reversed and the dissector blade is backed out of the inner subsurface lamellar tunnel it has formed. The vacuum is then eased and support base (50) is removed from the eye. Once the inventive device is removed from the eye, the ICR ~~(150)~~ may be introduced into the intrastromal channel just produced desirably with a coating of hyaluronic acid or other suitable material as a lubricant. The ends of ICR ~~(150)~~ may be joined using techniques discussed in the patents discussed above.